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CONNOLLY BOVE LODGE & HUTZ LLP
1875 EYE STREET, N.W.
SUITE 1100
WASHINGTON, DC 20006

EXAMINER	
SMITH, NICHOLAS A	

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The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte PANAYOTIS ANDRICACOS, DEAN S. CHUNG, HARIKLIA DELIGIANNI, JAMES E. FLUEGEL, KEITH T. KWIETNIAK, PETER S. LOCK, DARRYL D. RESTAINO, SOON-CHEON SEO, PHILIPPE M. VEREECKEN and ERICK G. WALTON

Appeal 2009-002858
Application 10/615,794
Technology Center 1700

Decided: August 17, 2009

Before CATHERINE Q. TIMM, KAREN M. HASTINGS, and JEFFREY T. ROBERTSON, *Administrative Patent Judges.*

HASTINGS, *Administrative Patent Judge.*

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant appeals under 35 U.S.C. § 134 from a final rejection of claims 16-26. We have jurisdiction under 35 U.S.C. § 6(b).

We REVERSE.

Appellants' invention is a method of operating a plating bath. Representative claim 16 reads as follows:

16. A method of operating a plating bath comprising:

providing a plating bath containing at least an accelerator;
plating at least one metal on a substrate;
measuring the bath concentration of at least one accelerator breakdown product ("void-formation marker, VFM");
measuring the bath concentration of said at least an accelerator;
determining a VFM ratio at each of a plurality of time-points, wherein said VFM ratio is the concentration of said VFM divided by the concentration of said accelerator;
counting, for each of said time-points, the number of voids in the metal plated on said substrate;
determining a VFM as the highest VFM ratio at which no voids are observed; and
maintaining said VFM ratio below said VFM threshold ratio by performing a bleed and feed of said plating bath to maintain said VFM ratio below said threshold VFM ratio.

The Examiner rejected claims 16-20 and 24-26 under 35 U.S.C. § 103(a) as unpatentable over the combined teachings of Seita[1], Blachier[2], Kopp[3], and Sun[4]. To reject dependent claim 21 under 35 U.S.C. § 103(a), the Examiner added Skoog[5] to the above four references. To reject dependent claims 22 and 23 under 35 U.S.C. § 103(a), the Examiner added Talasek[6] to the aforementioned four references.

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[1] US 6,881,391 B2 Apr. 19, 2005
[2] US 6,569,307 B2 May 27, 2003
[3] US 6,083,374 Jul. 4, 2000
[4] US 2002/0125142 A1 Sep. 12, 2002
[5] Douglas A. Skoog et al., Fundamentals of Analytical Chemistry, (7th ed. 1996).
[6] US 2004/0108213 Jun. 10, 2004

ISSUE

The dispositive issue before us is whether Appellants have shown that the Examiner erred in rejecting the claims under 35 U.S.C. § 103(a) because the applied prior art does not teach or suggest all of the claim limitations.

We answer this question in the affirmative.

PRINCIPLES OF LAW

The Examiner bears the initial burden of presenting a prima facie case of obviousness. *In re Oetiker*, 977 F.2d 1443, 1445 (Fed. Cir. 1992). In order to establish a prima facie case of obviousness, the Examiner must show that each and every limitation of the claim is described or suggested by the prior art or would have been obvious based on the knowledge of those of ordinary skill in the art. *In re Fine*, 837 F.2d 1071, 1074 (Fed. Cir. 1988)). "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness." *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006) (*quoted with approval in KSR Int'l Co. v. Teleflex Inc.,* 550 U.S. 398, 418 (2007)).

The mere fact that the prior art could be modified as proposed by the examiner is not sufficient to establish a prima facie case of obviousness. *See In re Fritch*, 972 F.2d 1260, 1266 (Fed. Cir. 1992). The examiner must explain why the prior art would have suggested to one of ordinary skill in the art the desirability of the modification. *See Fritch*, 972 F.2d at 1266.

ANALYSIS and FACTUAL FINDINGS

We need only discuss independent claim 16.

The Examiner admits that the combination of Seita in view of Blachier, further in view of Kopp, and further in view of Sun, does not explicitly describe determining a VFM ratio, nor a VFM threshold ratio, nor maintaining the VFM ratio below a VFM threshold (Ans. 5). The Examiner nonetheless concludes that this would have been obvious, since the

> steps of determining VFM ratio and VFM threshold ratio are performed inherently in that the measurements necessary to determine (or to calculate) the VFM ratio and VFM threshold ratio are taught in the above combination. A mathematical calculation (determining) is not a patentable designation and therefore the prior art inherently teaches such determination steps.

(Ans. 5; repeated at Ans. 9).

The Examiner alternately concludes that this would have been obvious because

> Given that performing bleed and feed of a plating bath is designed to keep accelerator concentrations constant (Kopp, abstract), maintenance of a VFM concentration below a VFM concentration threshold would be inherently equivalent to maintenance of a VFM ratio below a VFM threshold ratio under conditions wherein the accelerator concentrations are maintained to be substantially constant.

(Ans. 6; repeated at Ans. 9-10)

Appellants contend that the rejection is not proper because the Examiner's analysis "misses the point that the calculated VMF ratio is used to control plating bath operation and this method step is not taught or suggested by the cited references" as required in claim 16 (Br. 6), and that none of the references applied by the Examiner correct this deficiency (*see generally* Br.). We agree.

The Examiner has not established that the prior art taught or suggested determining a VFM ratio, and a VFM threshold ratio, and maintaining the VFM ratio below the VFM threshold ratio as set out in claim 16. The Examiner's analysis, which relies upon numerous modifications of the Seita reference, and then relies upon inherency if certain conditions were met, is simply untenable (Ans. 3-6). In short, the Examiner has failed to provide a sufficient factual basis to support his conclusion of obviousness, i.e., that the applied prior art teaches or suggests all the claim limitations.

Therefore, we reverse the Examiner's rejection of claims 16- 20, and 24-26 under 35 U.S.C. § 103 based on the combined prior art of Seita, Blachier, Kopp, and Sun.

The Examiner relied on Skoog and Talasek to respectively address the obviousness of the features recited in dependent claims 21, 22, and 23. The Examiner did not rely upon these references to teach or suggest the steps of determining the VFM ratio, the VFM threshold, and maintaining the VFM ratio below the VFM threshold value as claimed. Thus, the addition of these references does not address the distinction between the claimed invention and the invention of the combined prior art of Seita, Blachier, Kopp, and Sun. Therefore, we must also reverse the Examiner's additional rejections.

ORDER

The Examiner's decision to reject the appealed claims is reversed.

REVERSED

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CONNOLLY, BOVE, LODGE & HUTZ LLP
1875 EYE STREET, N.W.
SUITE 1100
WASHINGTON, DC 20006